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THE EMERGENCE OF E-COMMERCE IN CONSUMER MARKETS: NEW NICHE FORMATION OR CREATIVE DESTRUCTION?

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Abstract

Internet-based e-commerce is a new type of business model that promises effective business activity. However, there have been some worries about the new type of business model: Is the new business model destroying existing businesses or creating new businesses. In this paper, the authors try to explain the phenomena based on organization theories: new niche formation theory and creative destruction theory. The findings from the preliminary study of retail bookstore industry supported the argument of new niche formation theory in characterizing the process of how e-commerce has emerged in consumer markets.

Introduction

It is widely known that information technology advancement has offered firms new ways to do business (e.g., Rayport and Sviokla 1995). E-commerce appears to be one of them. E-commerce has dramatically transformed the way to do business in producer or business-to-business markets and has gained attention from both business press and academics. Yet, the theoretical explanation of how the new business model would affect existing businesses has not been systematically developed and empirically tested.

There are two theories that could potentially explain the process of how e-commerce has taken place in consumer markets. First, new niche formation theory from organizational ecology postulates that environmental change may create a new niche, which has not been occupied by incumbent firms and opens market opportunities for new entrants (Delacroix & Solt, 1988; Swaminathan, 1998). From new niche formation perspective, the emergence of e-commerce represents a new business opportunity for new firms or for existing firms that can adapt their structure towards the requirements in the emerging niche. Second, creative destruction theory from Schumpeterian economics proposes that entrepreneurs' innovations, which have greater appeal to buyers, come to replace the existing products or services and creatively destroy the existing markets of incumbent firms (Schumpeter, 1975). From creative destruction perspective, the emergence of e-commerce represents a threat to the survival of existing firms.

Firms' strategic considerations towards opportunities are generally different from their strategic considerations towards threats. Therefore, it is important for firms to realize whether the emergence of e-commerce in consumer markets is characterized by new niche formation implying new business opportunities or creative destruction indicating major threats to the survival of companies before making a comprehensive strategic decision pertaining to the emerging e-commerce.

This paper aims to explain the process how e-commerce has taken place in consumer markets, more specifically to answer the research question "whether the emergence of e-commerce in consumer markets is explained or characterized by new niche formation or creative destruction process". This paper also provides practical implications for managers in formulating their strategy and business policy towards the emergence of e-commerce in consumer markets.

Literature Review

New Niche Formation Theory

Organizational ecologists theorize that environmental change may create a new niche, which has not been occupied by incumbent firms or may not well suit with the existing organizational structure of incumbent firms to occupy it (Hannan & Freeman, 1977; Delacroix & Solt, 1988; Swaminathan, 1998). The new niche represents a new emerging demand or a new market segment, which has never been tapped, and opens the window of opportunity for a new organizational form to emerge.

Two of major environmental changes, which might lead to a new niche formation, are 1) technological changes and 2) changes in consumers' socioculture (Abernathy & Clark, 1985).

Technological changes may create new niches in terms of new geographical market segments and/or new product market segments. For example, the technological evolution in communication, transportation and financial services enable firms to more easily manage business operations, exploit business opportunities in other countries, and make new global market segments in many industries more attainable (Bleakley, 1993). Another example is the creation and expansion of craft beer segment in brewing industry, which was in part fueled by the technological advancement of highly sophisticated small batch brewing equipment (Student, 1995).

Changes in consumers' socioculture may also create new demands, which call for new product characteristics, and eventually lead to a new product market segment. For example, the increasing health concern in U.S. has stimulated the creation and expansion of a dietary supplement segment in pharmaceuticals industry while the busy American lifestyle has been an important factor in the development of U.S. fast food industry (Litzenberger, 1997). In the same fashion, Delacroix and Solt (1988) found that new niches in the wine industry emerged in the face of changes in consumers' lifestyle.

Creative Destruction Theory

Schumpeter (1975) has proposed the concept of creative destruction as the process that entrepreneurs make their entry into established markets through inventions and innovations, which have greater appeals to buyers, and acquire market share from the incumbent firms. As entrepreneurs increase competition by innovations substitutable for the existing products/services of incumbent firms, the incumbent firms' market share erodes. In other words, the new demand or new market segments emerged through entrepreneurs' innovations come to replace the existing ones. Some incumbent firms will decline and fail out of business while some others may make an attempt to adapt their products/services to stay in the competition. By that manner, entrepreneurs creatively destroy the established market structure. In short, Schumpeter named the process of creating new demand while destroying the existing market structure as "creative destruction" (pp. 81-86).

New demand or new market segments emerged through the process of creative destruction are considered threats rather than new opportunities to the incumbent firms in the markets. For example, the technological innovations in typesetter industry from hot metal, to analog, to digital and to laser setter during the 1886-1990 period created new markets at the expense of the existing ones. Also, the technological innovations opened the window of opportunity for new entrants to come into the existing markets as direct threats to the incumbents (Tripsas, 1997). Another example is that the technological advancement in computer software and hardware has provided personal computers with typewriting capabilities, which have significantly reduced the market demand of manual typewriters.

E-commerce in Consumer Markets and Working Definition

Electronic commerce or e-commerce is defined as "maintaining business relationships and selling information, services, and commodities by means of computer telecommunications networks (electronic commerce, 2001)." Since this study is focused on e-commerce in consumer markets, which are in the final stage of value chain (Porter, 1985), e-commerce will be narrowly defined as buying and selling goods over the net or online transactions between end-customers and product/service providers. The business activities at the final stage of value chain are not limited only to buying and selling between end-customers and product/service providers but also include customer feedback and services after sales, etc. However, this study takes the position that buying and selling are primary activities, which may be seen as a necessary condition for e-commerce. In this study, the working definition of e-commerce in consumer markets is therefore central around buying and selling activities, which is consistent with the common definition by practitioners.

E-commerce vs Traditional Business Operations: What E-Commerce Is Not?

In general, e-commerce may include non-internet-based commerce (Kalakota & Whinston, 1996). For instance, traditional EDI did not use the Internet as a communication network, but it is considered as a type of original e-commerce. In this paper, however, only internet-based e-commerce is considered to compare it with traditional commerce. In other words, e-commerce is a new type of business model in which the Internet is the main tool of business. For example, even though Amazon.com uses traditional way of delivering products through postal carriers, it is considered an e-business (a company of e-commerce) because it uses the Internet as the main tool of business (providing information about books, receiving orders through Web sites, etc.). On the other hand, if a company only posts information on its Web sites and does not do any business activity, it is not considered an e-business.

Theoretical Arguments and Hypotheses

Emergence of E-Commerce as the Process of New Niche Formation

Arguably, the technological change in network communication technology, computer mediated tools, and information technologies has been a major driver for the emergence of e-commerce (e.g., Bakos, 1991; Evans & Wurster, 1997, to name a few). According to the new niche formation theory, this technological change and the advancement in information technology may open a new niche or new market/customer segment, which has not been captured by the incumbent firms with traditional business operations. The traditional business operations of incumbents may not fulfill the requirements of this new segment or may not have the capabilities to reach this emerging segment.

In the context of consumer markets, there may be a number of potential customers whose needs have not been met by traditional business operations of the existing firms. For example, this group of customers may perceive the trip to physical stores as troublesome, the prices with high markup from middlemen as unreasonable, and the mail orders providing inadequate detailed information about products as blind selection, etc. Therefore, they are considered the potential customers with unmet demands by the traditional business operations. With the advancement in information technology, the e-commerce firms emerge to capture this group of potential customers by providing virtual shopping malls, online catalogs, and products at low-markup prices. As a result, a new niche or new segment is formulated and separates from the group of traditional firms' customers who may perceive visiting and shopping at the physical stores as an unparalleled pleasant experience or may be deeply habitualized in traditional mail orders. In addition, the e-commerce firms may expand their geographic reach to the potential customers in global markets, which may not be easily reached by traditional business operations. Therefore, the e-commerce firms can exploit the new opportunities opened up by the technological advancement.

Emergence of E-Commerce as the Process of Creative Destruction

According to creative destruction theory, the innovations by entrepreneurs with the greater appeals come to challenge and replace the existing products. From creative destruction perspectives, the entrepreneurs deploy advanced information technology and invent e-commerce as a new way of operating business, which may be able to provide superior price-valued products and services to customers than the traditional business operations. For example, the e-commerce firm can pass on cost saving from fewer middlemen and lower markups to end customers. Also, the web and network technology can allow customers to give feedback/responses to firms to improve their products and services, and the e-commerce firms can make response to customers' requests in a more timely fashion than the firms with traditional business operations. Therefore, the e-commerce firms will increase their business at the expense of the traditional firms, and will destroy the existing markets of traditional firms. Eventually, e-commerce as the way to conduct business will replace the traditional business operations.

Propositions and Hypotheses

The preceding discussion suggests the following propositions:

Proposition 1: If the emergence of e-commerce in consumer markets is characterized by creative destruction, the size and the expansion of e-commerce segment will be negatively correlated to those of traditional business segment.

Proposition 2: If the emergence of e-commerce in consumer markets is characterized by new niche formation, the size and the expansion of e-commerce segment will not be negatively related to those of traditional business segment.

From the above propositions, the following testable hypotheses can be drawn.

Hypothesis 1a: If the emergence of e-commerce in consumer markets is characterized by creative destruction, the industry sales generated through e-commerce will be negatively related to that of traditional business.

Hypothesis 1b: If the emergence of e-commerce in consumer markets is characterized by creative destruction, the industry growth rate in sales generated through e-commerce will be negatively related to that of traditional business.

Hypothesis 2a: If the emergence of e-commerce in consumer markets is characterized by new niche formation, the industry sales generated through e-commerce will not be negatively related to that of traditional business.

Hypothesis 2b: If the emergence of e-commerce in consumer markets is characterized by new niche formation, the industry growth rate in sales generated through e-commerce will not be negatively related to that of traditional business.

Both new niche formation and creative destruction theory, originated from two different schools of thought, seem to logically explain the emergence of e-commerce in consumer markets. Therefore, to decide whether the process that e-commerce has emerged in consumer markets is characterized by new niche formation or creative destruction should rest upon the empirical basis.

Research Method

This study is an on-going project that will include historical data analyses, possibly interviews with companies, and so on. Currently, a preliminary study has been conducted.

Preliminary Study

To test the proposed hypotheses, this study used the historical data analyses at industry level as the research method. This method allows us to conduct a longitudinal study to compare the growth rate and size of consumer sales (the expansion and size of segment) made through e-commerce and traditional operations across time. The preliminary study was based on the data collected from retail bookstore industry. The retail bookstore industry seems to be a reasonable place to start the empirical test since it is considered the industry where e-commerce has revolutionized the business operations in the past decade. Therefore, it may be a conservative industry choice for the case study in this preliminary study.

Data Collection and Measurement

The data in this preliminary study were collected mainly from annual reports. Since e-commerce started to revolutionize the consumer markets in the mid-1990s, the period between 1994 and 2000 seems to be a reasonable time frame of the study. The industry sales were data in the interest of this study. The sale figures at the aggregate industry level were partitioned into the industry sales through e-commerce and traditional business. The industry sales and growth rate in sales through e-commerce and traditional business were used as proxies for the size and expansion of e-commerce and traditional business segment respectively. The industry sales and growth rate by segment are portrayed in Table 1.

Sales or revenues seem to be a reasonable variable that can be easily operationalized to measure the size of industry. Profit may be a plausible index. However, it is disregarded because it is a vulnerable index. In fact, profit is the remaining amount of revenue after expenses and/or costs are deducted from it. Sometimes, companies, especially start-ups, may need to spend more money than they earn to establish the business stance, or in some cases companies may manipulate profits for tax advantages. On the other hand, sales or revenues seem more straightforward/less subject to accounting manipulations and may thus be a better proxy for the size and expansion of business segments.

Table 1. Retail Book Store Industry Sales and Growth Rate (in thousand dollars)

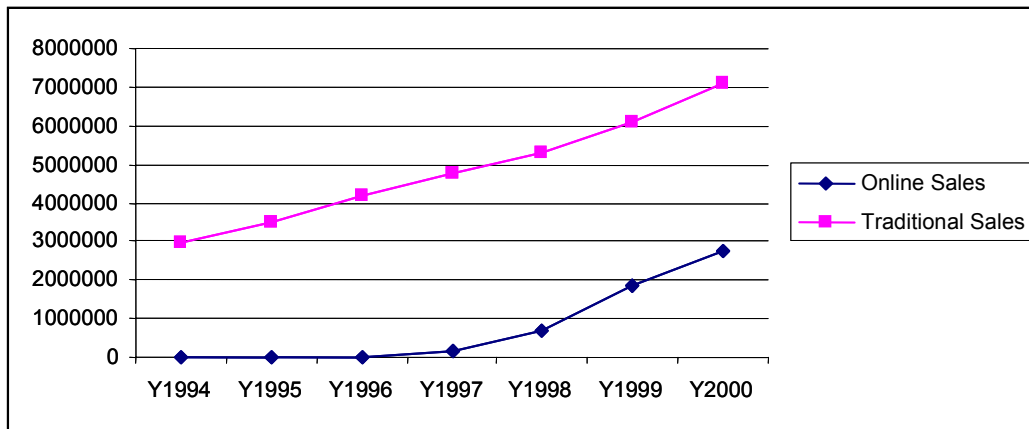
	1994	1995	1996	1997	1998	1999	2000
Barnes & Noble	1622731	1976900	2448124	2796852	3005608	3486043	4095059
B&N.com	0	0	0	11949	61834	202567	297610
Amazon.com	0	511	15746	147787	609819	1639839	2465665
Borders (Store)	1370600	1511000	1749000	1958800	2266000	2590400	2981300
Borders.com	0	0	0	0	0	4600	17900
Online sales	0	511	15746	159736	671653	1847006	2781175
Traditional sales	2993331	3487900	4197124	4755652	5271608	607644	7076359
Online growth rate	-	-	29.81	9.14	3.2	1.75	.51
Traditional growth rate	-	.17	.20	.13	.11	.15	.16

Assumptions:

- (1) Sales made by Barnes and Noble (traditional stores and dot com), Borders (traditional stores and dot com), and Amazon is the majority of total sales in the industry.
- (2) Sales made by Amazon.com, B&N.com and Borders.com represent the majority of online sales in the industry.
- (3) Sales made by Barnes & Noble and Borders' traditional stores represent the majority of traditional sales in the industry.

Data Analysis and Results

The data analysis for this study is based on the data shown in Table 1. This study analyzed the data mainly through Pearson correlation and graphical techniques. Figure 1 and 2 are drawn based on the data collected through historical records.

**Figure 1. Online and Traditional Industry Sales (in thousand dollars)**

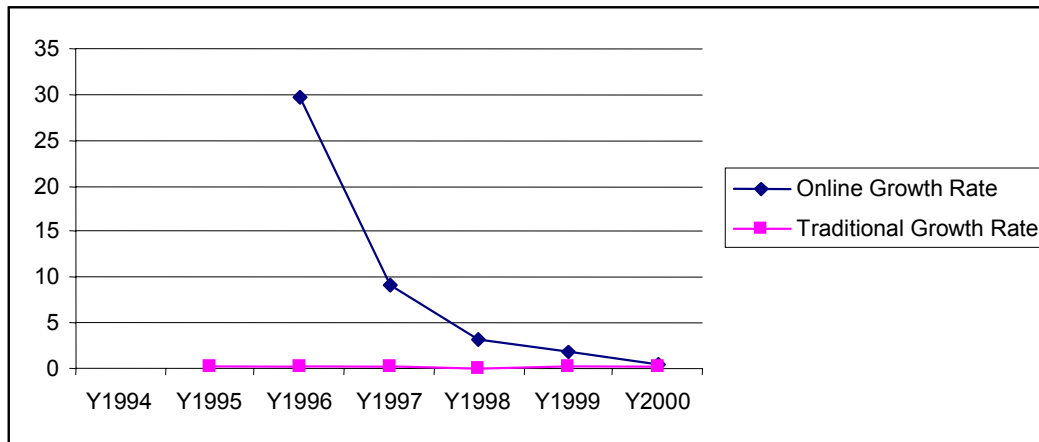


Figure 2. Online and Traditional Industry Growth Rates in Sales (in percent)

Figure 1 indicates that the online sales are positively related to the traditional sales. **The correlation between online sales and traditional sales were 0.92, which was statistically significant at the 0.01 level.** Figure 2 shows that the online sales growth rate experiences diminishing return since 1996 (from 29.81 to 0.51 times, see Table 1) while the traditional sales growth rate stays relatively stable (from 0.17 to 0.16 times, see Table 1) over the period of study. In other words, the online sales have grown at decreasing rates whereas the traditional sales have grown at relatively stable rates. **The correlation between online sales growth rate and traditional one was positive (0.48) but not statistically significant at the 0.05 level.** Therefore, the results from the data analyses provide strong support for hypothesis 2a and moderate support for hypothesis 2b, but no support for hypotheses 1a and 1b. In other words, new niche formation seems to have occurred in book retail industry.

Discussion and Conclusions

The findings from the case study in retail bookstore industry strongly support the argument of new niche formation theory and do not confirm the argument of creative destruction theory in explaining the process of how e-commerce has emerged in consumer markets. Although the growth in online or e-commerce segment has been relatively high compared to that of traditional business segment, the great diminishing in growth rate of e-commerce segment over time may imply the process of filling the e-commerce niche.

The positive relationship between the size of e-commerce segment and that of traditional business segment in the retail bookstore industry is an unexpected finding. The explanation for this counter-intuitive finding may be that the emergence of e-commerce in retail bookstore industry may stimulate the overall industry demand from which the traditional business segment can to some degree benefit. This line of reasoning is consistent with Leone and Schultz's (1989) findings that one firm's advertising of particular products or services can stimulate demand for all firms in the industry.

In summary, the findings in the retail bookstore industry indicate that the online or e-commerce segment is a new niche, which seems to be a new business opportunity rather than a threat to the traditional business segment. Therefore, e-commerce seems to be a strategic choice rather than a strategic imperative in consumer markets. E-commerce as a strategic choice may make a managerial implication that whether to adopt e-commerce in consumer markets depends on firms' resource availability and how well the e-commerce operations align with their strategic intent and mission.

Limitations and Future Research

Some limitations are inherent in this study. The first limitation is that this study simplified the data collection process by assuming the sales made by leading companies account for the majority of industry sales. The more complete data on industry sales may strengthen the validity of the measurement. Second, the empirical examination in this study is considered a preliminary one with a case study on one industry. Although the retail bookstore industry may be a conservative case selection, whether the findings can be generalized to other industries is subject to further research. In other words, the external validity is still a legitimate issue

to be raised. To deal with the external validity issue, Yin (1994) has suggested case study researchers to replicate the study with different cases. Therefore, future research may conduct multiple case studies in various industries to see whether the findings in this study will be replicated.

If future research finds the replicated results, it will be a strong empirical basis to support the theoretical argument that the emergence of e-commerce in consumers markets is characterized by new niche formation. However, if future research yields conflicting findings, it may be a call for identifying the factors that delineate the industries in which the emergence of e-commerce is best characterized by new niche formation and the industries in which the emergence of e-commerce is best characterized by creative destruction. Hopefully, the limitations in this study can suggest a more rigorous method for future research.

Acknowledgment

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